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ABSTRACT

This paper studies the impact of the COVID-19 pandemic on youth disconnection—i.e., the share of young people who were neither in school nor at work. Youth disconnection offers important advantages, relative to unemployment or participation rates, as a measure of the labor market for the most marginal and disadvantaged youth. Before the pandemic, approximately one out of eight young people between the ages of 18 and 24 were disconnected. The disconnection rate increased dramatically in April 2020 because of the pandemic; however, it has decreased quickly since that time. The increase in the disconnection rate at the beginning of the pandemic was mostly driven by a reduction in full-time work, but toward the end of 2020, the school enrollment rate also fell. Within-individual transition analysis reveals that the pandemic drove some individuals to disconnection, regardless of whether those persons were in school, at work, or already disconnected. Full-time workers saw the largest increase in transition to disconnection. Compared to the 2007 recession, the full-time-work to full-time-work transition decreased more and the full-time-work to disconnection transition increased more during this pandemic.

JEL Classification Codes: J13

Key Words: COVID-19, youth labor market, youth disconnection

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The term "disconnected youth," also known as opportunity youth or NEET ("not in education, employment, or training"), refers to those young adults who are disconnected from school or the labor market. These young adults are less likely to accumulate human capital than those who stay connected with school and the labor market, which can potentially damage their long-term success. Youth disconnection has been an issue in the United States for years. In 2019, approximately four million, or 13.8 percent, young adults between the ages of 18 and 24 were reported to be neither in school nor at work. Disconnection rates are higher among minorities: 19.3 percent for blacks and 15.2 percent for Hispanics.[1]

Economic downturns can disproportionately affect young people in negative ways and exacerbate youth disconnection. Unemployment rates among young people rise during recessions, often more than the unemployment rate among prime-aged adults (Hoynes et al., 2012). The disconnection rate also rises during recessions. Frequently, the disconnection rate moves together with the unemployment rate. Compared to the unemployment rate, however, the disconnection rate can be a more relevant measure for young people because it summarizes the labor market state for the age group that is the least attached to the labor market and the least effective in terms of human capital accumulation. In particular, the unemployment rate does not capture those youths who drop out of the labor force completely. Disconnection is also different from labor force nonparticipation in that it takes school into account. This distinction is important when measuring the status of the youth labor market because a sizable share of young people are enrolled in school, and flows into schooling often increase during recessions.

At the beginning of 2020, a deadly coronavirus, known as COVID-19, started to spread across the world, stalling economic activities. To slow down the spread of the virus, state and local governments have issued various social-distancing and stay-at-home orders, starting in late March and early April 2020. Unemployment rates soared, and unemployment insurance claims skyrocketed. This COVID-19 pandemic, as with any economic downturn, makes for a particular challenging time for most young people. Timely analysis of the impact of the

[1] We excluded the data from June, July, and August when calculating these statistics.

pandemic on young adults can assist researchers and policymakers in understanding the scope of the pandemic.

The Current Population Survey (CPS), though it has its limitations, is particularly useful for this task. The CPS allows us to discuss the impact of the pandemic on youth disconnection using the cross-sectional feature of the data. More importantly, the panel structure of the data allows us to link individuals over time and investigate within-individual changes. The CPS tracks a person for four months after the person enters the survey; then, after an eight-month break, the person is surveyed for another four months. We utilize this panel structure to discuss how the pandemic changes individuals' transitions, from the first to the second four-month panel, among four mutually exclusive labor-market and school states of being: 1) disconnection, 2) school, 3) part-time work, and 4) full-time work. This breakdown reveals young people's choices during the pandemic, conditional on their labor market status in the prepandemic periods, and makes it possible to identify the groups that are affected the most.

The four main results of the paper can be summarized as follows:

1) The disconnection rate increased dramatically from 13.4 percent in February 2020 to 25.3 percent in April 2020. That means that last April, one out of four young adults were neither in school nor at work. The disconnection rate then gradually decreased after April.

2) The increase in the disconnection rate at the beginning of the pandemic was mostly driven by a reduction in work, especially full-time work (more than 35 hours a week). School enrollment rates barely changed at the beginning, but toward the end of 2020, school enrollment rates started to fall, which contributed to the persistence of the high disconnection rate.[2]

3) Full-time jobs were hit the hardest in 2020, though this measure had mostly recovered by the end of the year. The pandemic drove a proportion of individuals to disconnection, regardless of whether those persons were in school, at work, or already disconnected, but

[2]At the time of this writing, newly released CPS data suggest that the disconnection rates remained above 17 percent in the first three months of 2021. The school rate in March 2021 was at 45.7 percent, two percentage points below the corresponding months for the previous three years.

full-time workers saw the largest increase in transition to disconnection. Those who were already in disconnection saw the smallest increase. Workers, especially part-time workers, became more likely to go back to school during the pandemic than in the prepandemic period, so schools provided an alternative option for young workers. Those who started out from disconnection, however, did not seem to benefit from the school system, nor did we find an increase in the school-to-school transition or persistence in schooling—that is, that a person either stays in school longer or is more likely to pursue a more advanced degree.

(4) Compared to the 2007 recession, this pandemic has a larger impact on full-time workers: we see a larger decline in the persistence in full-time work and a larger increase in the transition from full-time work to disconnection during the pandemic.[3] In addition, during the 2007 recession, we see an increase in the transition from all four states to school, but this pattern is not observed during this pandemic, though we do observe a large increase in the transition from part-time work to school. The increase in school-to-school transition that happened during the 2007 recession did not occur during the pandemic.

This paper contributes to the literature that evaluates the impact of COVID-19 on the labor market. Since the onset of the pandemic, the unemployment rate, as well as unemployment insurance claims, has increased dramatically. In April, when the economy started to shut down because of the pandemic, the unemployment rate spiked at 14.7 percent, the highest rate since 1948, according to a Bureau of Labor Statistic (BLS) news release.[4] Some researchers have shown that the negative effect is larger among young and low-wage workers (Cortes and Forsythe, 2020). As the economy reopened, employment recovered slowly, but younger people were among those who had the lowest reemployment rate (Cheng et al., 2020; Chetty et al., 2020). This paper adds to the literature by providing a detailed analysis of the impact on the youth labor market.

We also contribute to the literature on the youth labor market. Youth disconnection and

[3]We use the data between 2008 and 2010 to capture the impact of the 2007 recession—in other words, we do not include the recovery period for this exercise. The prerecession transition matrix is estimated using data between 2003 and 2006.

[4]See https://www.bls.gov/news.release/archives/empsit_05082020.htm.

NEET have been important topics among researchers and policymakers around the world (Belfield et al., 2012; ILO, 2020; Mascherini et al., 2012). Timely analysis of the impact of the negative shock of the Covid-19 pandemic can be informative to policymakers to help them understand the scope of the impact. Another relevant literature discusses the impact of recession when young people enter the labor force (von Wachter, 2020). For example, Kahn (2010) and Oreopoulos et al. (2012) show that the negative effects on the earnings of young people who enter the labor market during a recession is long-lasting. While this paper does not discuss the long-term impact of the Covid-19 pandemic, it does discuss the extensive impact of the COVID-19 pandemic on young people and suggests that without additional support, the impact could be enduring.

The rest of the paper is organized as follows: In Section 1, we discuss our measure for disconnection. Then we present our main results in Section 2, and we show how this pandemic is different from the 2007 recession in Section 3. Finally, Section 4 discusses the limitations of the study and concludes the paper.

1 Measuring youth disconnection during the pandemic

The Current Population Survey (CPS) is a monthly survey. In the CPS, the Bureau of Labor Statistics collects information regarding an individual's school and work status for a reference week, usually the week that contains the 12th day of a month, so we know if a person is enrolled in school or work for that week. Those who are in school or at work are not disconnected, and we will discuss the impact of the pandemic on school and work explicitly. Those who are unemployed or not in the labor force, conditional on not being in school, are categorized as disconnected.

The categorization of those who have jobs but do not work in the CPS is more complicated. One challenge that arises during the pandemic is that the CPS categorized a proportion of unemployed as those who are employed but absent from work, so a clear demarcation line between unemployed and "employed but does not work" is not available

during the pandemic.[5] People who were not able to work because of the pandemic but not because of their own illness were supposed to be categorized as unemployed, but some interviewers placed them in the "absent from work" category. In addition, a large share of the "absence" category is assigned to "other reasons" for the question regarding "reasons for absence." To maintain a consistent measure for disconnection, we categorized individuals who had jobs but did not work for "other reasons" as disconnected. In addition, we categorized those workers on vacation as disconnected, while the rest of the reasons were categorized as nondisconnected. Table 1 provides a detailed description of our characterization.

Another challenge of using the CPS data during the Covid pandemic months is that the response rate to the CPS interviews is lower compared to the previous years. The response rate is much lower among those who were interviewed for the first time. The probability of not responding to the survey is correlated with individual characteristics, such as income. Because response rate is negatively associated with income, and young people from low-income families are more likely to be disconnected, our estimated disconnection rate using cross-sectional data could be downward biased. This potential bias is not possible to overcome without detailed income data. Fortunately, the response rate recovered substantially in September 2020, so the estimates are less subject to bias toward the recovery periods of the pandemic.

In the analysis, we take advantage of the individual-level panel structure in the CPS and investigate within-individual changes. This approach does not address the bias problem, but among the individuals who were supposed to be reinterviewed, the response rates did not drop as much as for the respondents who had just entered the sample. In the CPS, a sampled individual is interviewed eight times: four consecutive months after being sampled (rounds 1 to 4); then the individual is out of the sample for eight months; after that, the person is interviewed again for another four consecutive months (rounds 5 to 8). We restrict the sample to individuals whose fifth-round interview started after April 2020, and we calculate

[5] See, for example, https://www.census.gov/newsroom/blogs/research-matters/2020/09/pandemic-affect-survey-response.html.

the probability of the people being interviewed at least once in 2020, conditional on being interviewed in 2019. We use April as the starting point so that all the data points in 2020 are affected by the pandemic.

We report the probability of being reinterviewed from the 2019–2020 panel in Table 2 by age group, gender, and race. We also report the results from the 2018–2019 panel, for comparison. The reinterviewed rate is lower in 2020 among those who were first interviewed in 2019 than in 2019 among those were first interviewed in 2018, but the differences are not as striking as the 10 percentage points that are reported in the cross-sectional data. Among prime-aged individuals who were between 25 and 54 years old when entering the sample in 2019, 77.2 percent are reinterviewed in 2020. The number is 0.8 percentage points lower compared to the 2018–2019 panel. Individuals who were between 18 and 24 when entering the sample were less likely to be reinterviewed compared to prime-aged individuals. The reinterviewed probability dropped by 2.1 percentage points in the 2019–2020 panel compared to the 2018–2019 panel. The drop in the reinterviewed probability is similar across gender and race.

The reinterviewed rate, however, is still low, and it is lower when compared to the panel from the previous year because of the pandemic. In the within-individual analysis in Section 2.3, we treat "not reinterviewed" as a stand-alone destination state when discussing how young people transitioned from the four states we examined—1) school, 2) part-time work, 3) full-time work, and 4) disconnection.

Before we discuss the results, it is worth mentioning that a cross-sectional measure of the disconnection rate represents two groups of young people—1) those who are transitioning in and out of the state of disconnection and 2) those who are staying in disconnection for long periods of time. Using the panel structure of the CPS, we find that among those who were disconnected for at least one month in the 2018–2019 panel, 28 percent spent more than 75 percent of the observed time in disconnection. In other words, a disconnection rate reflects a large proportion of young people who do not have a stable career and transition in and

out of disconnection.[6]

2 The impact of the COVID-19 pandemic on youth disconnection

In this section, we start by presenting the overall impact of COVID-19 on individuals between the ages of 18 and 24 years. Then we discuss the differential impact across demographic groups. Finally, we utilize the panel structure of the CPS data to investigate within-individual changes.

2.1 Overall impact on youth labor market

Since the beginning of the pandemic, researchers have been following its impact on the labor market closely. Here, we start by analyzing two standard measures of the labor market and investigate how the pandemic affects young adults and prime-aged people differently. One central measure researchers rely on when studying labor market issues is the unemployment rate. Figure 1, Panel A, shows the trends of the unemployment rate for young adults and prime-aged individuals from January 2019 to December 2020. In 2019, the average unemployment rate among prime-aged individuals between 25 and 54 was 3.1 percent. For young people between 18 and 24, the average unemployment rate in 2019 is higher, at 7.9 percent. The unemployment rate increased dramatically in April 2020, when the pandemic started. The unemployment rate among prime-aged individuals increased from 3.4 percent in February to 12.8 percent in April, and the unemployment rate among young people rose from 7.8 percent in February to 26.8 percent in April. During this time, the impact of the pandemic on the unemployment rate was larger for young people in percentage-point changes. In both cases, the unemployment rate dropped steadily after April. In December, the unemployment rate remained higher compared to the corresponding month in the pre-

[6] Chen et al. (2020) show a similar result using panel data from the National Longitudinal Survey of Youth 1997. They further reveal that those who constantly transition in and out of a state of disconnection tend to hold low-wage and high-turnover jobs.

vious year: 4.3 percentage points higher for young people and 2.9 percentage points higher for prime-aged people.

Another key measure researchers rely on is the labor force participation rate (LFPR), which we report in Panel B of Figure 1. LFPR is higher among prime-aged individuals than among young people, because some young people are in school. In 2019, the average LFPR was 82.7 percent among the prime-aged and 65.7 percent among the young. The COVID-19 pandemic negatively affected the LFPR for both groups. The impact is, however, smaller for the prime-aged individuals at the beginning: for this group, the LFPR dropped slightly from 83.0 percent in February to 79.7 percent in April, then it increased and remained over 80 percent thereafter. For young people, the LFPR dropped from 65.1 percent in February to 56.8 in April. Compared to April 2019, the LFPR was 7.0 percentage points lower in April 2020. The difference in the corresponding months between 2019 and 2020 then shrank gradually and closed in December, but the LFPR among the prime-aged is still lower for that month compared to December 2019.

When constructing the unemployment rate statistics in Figure 1, we count only those who are categorized as unemployed by the CPS data. As mentioned earlier, the unemployment rate is not consistently defined in the CPS data during the pandemic. The disconnection measure we use takes care of this inconsistency. The unemployment rate also does not distinguish the unemployment of those who are enrolled in school from that of those who are not, although these two states may be different for young people in terms of human capital accumulation. Similarly, the LFPR for young people does not carry the same meaning as for the prime-aged, because young people have the option of being in the labor force, or school, or both. For example, the decline in LFPR that we observed in April could simply be an artifact of young people going back to school. In this case, the implication of the declining LFPR is different from a decline in the LFPR among prime-aged individuals. Therefore, neither unemployment nor LFPR provides a full picture regarding outcomes for young people. The disconnection rate is a useful complement to those two measures, which only consider the labor market status.

The disconnection rate, following the trends in the unemployment rate during the pandemic, increased dramatically, from 13.4 percent in February to 25.3 percent in April (Panel A of Figure 2). The number of disconnected young people increased from 3.9 million in February to 4.3 million in April. Compared to April 2018 and April 2019, the disconnection rate is approximately 10 percentage points higher. The difference kept shrinking over time. The disconnection rate is mechanically higher during summer months, when young people who enrolled in school are on summer vacation. To net out the impact of the pandemic, we regress the disconnection rate on dummy variables for month (γ_m) and year (δ_y), and then on a set of indicators for months in 2020 ($I(month = t) * I(year = 2020)$):

$$DR_{my} = \alpha_0 + \gamma_m + \delta_y + \Sigma_{t=2}^{t=12} \alpha_{t-1} I(month = t) * I(year = 2020) + \varepsilon_{my}. \quad (1)$$

Panel B of Figure 2 plots the coefficients on the interaction terms, which represent the seasonally adjusted impact of the pandemic.[7] For this analysis, we use the data from 2015 to 2019, as in Cortes and Forsythe (2020). This figure suggests that the disconnection rate increased in April by more than 10 percentage points and then fell gradually. Starting in October, it rebounded slightly.

To provide a more complete picture of the impact on young people, we examined the changes in school and work. Panel A of Figure 3 plots the share of people enrolled in school or training programs.[8] There is evidence that young people use school to shield themselves against bad labor-market shocks. During this pandemic, however, the school rate barely changed, except for a temporary increase during the summertime. In fact, the school rate started to fall after September 2020.

In Panel B, we plot the trends in work and further categorize the work types as part-time ($<$ 35 hours/week) and full-time ($\geq$ 35 hours/week) work. The share of young people who

[7] The disconnection rate is weighted by the monthly sample weight.

[8] We construct four mutually exclusive states: 1) full-time work, 2) school, 3) part-time work, and 4) disconnection. In the case of ties, we use the following ordering: full-time work $>$ school $>$ part-time work $>$ disconnection.

worked part time barely changed over this time period.[9] The percentage of young adults who were employed part time fell moderately in April and then started to increase gradually afterward. Full-time workers, however, did not follow the same trend. After accounting for seasonality, the percentage of young people working full time dropped by 11.2 percentage points from February to April—with the actual share dropping from 33 percent in February to 22 percent in April—and stayed low during the summer and early fall. The full-time workers then started to recover in October. Because of the difference in the trends between part-time and full-time work, we consider them as two different states when we investigate within-individual changes in Section 2.3.

In summary, Figure 3 suggests that the increase in the disconnection rate at the beginning of the pandemic was mostly driven by a reduction in full-time work—those who worked 35 hours a week or more. Toward the end of 2020, the drop in the school rate played an important role.

2.2 The impact of the pandemic across demographic groups, states, and industries

Before we present the results for within-individual transitions, we will briefly discuss the impact of the pandemic across demographic groups. In Panels A and B of Figure 4, we plot the impact of the pandemic across gender and race. The trends of the impact are similar across these groups, but the pandemic, on average, had a larger negative effect on minorities. For males, the pandemic increased the disconnection rate for blacks and Hispanics by 18.7 and 14.7 percentage points in April relative to February, but the number is smaller among white males, at 11.7 percentage points. By December 2020, the disconnection rate had fallen to only a few percentage points higher than in nonpandemic times; also, black males recovered faster than the other two groups. The impact of the pandemic on females was slightly different: In April 2020, the disconnection rate increased by 18.2, 12.6, and 10.8

[9]Note that those who are in school and work part time at the same time are categorized to be in school, so this share captures those who work part time, conditional on not being in school.

percentage points, respectively, for black, Hispanic, and white females. By the end of 2020, the disconnection rate had recovered fully for white females, but for minority females it was still a few percentage points higher, compared to the prepandemic period.

Panel C of Figure 4 shows the trends for different age groups. This figure suggests that the impact increases with age. One explanation for this pattern is that young people are less likely to be in school when they grow older, and they become more vulnerable to bad labor market shocks when they are in the process of transitioning from school to labor market. In this sense, schools provided a certain level of protection for young people who were enrolled and prevented them from being disconnected.

Next, we explore the impact across different states. In Figure 5, we plot a map for the change in the disconnection rate for each state.[10] Compared to 2019, the disconnection rate increased in most of the states. Among all states, Nevada saw the largest increase in the disconnection rate. Considering the industry composition in Nevada, this observation suggests that industry composition can play a major role in driving the disconnection rate. To explore the differential impact across industries further, Figure A2 plots the percentage change in employment by major industry categories. Entertainment and recreation services experienced the largest decline, followed by personal services, eating, drinking, and lodging places. This is not surprising, because the social-distancing and stay-at-home policies affect mostly "nonessential" service sectors that require interpersonal interactions. By comparison, employment loss in the retail sector was relatively mild, because many establishments in retail were considered to be essential.

2.3 Transitions among disconnection, school, and work

In this section, we investigate how young people transition among different educational and labor market states. Based on the discussion in Section 2.1, four states are of interest: 1) disconnection, 2) school, 3) part-time work, and 4) full-time work. In addition, we investigate

[10]Figure A1 plots the disconnection rate for all states in 2019 for the sake of comparison. In both cases, we use data between January and December, but leaving out the summer months.

the transition to "not interviewed" because a fairly large number of young people were not interviewed in 2020 after they were interviewed in 2019. In this "not interviewed" category, we also count those whose work, school, or disconnection status is not determined. These two conditions are summarized into a "missing" category. Using the four-eight-four panel structure of the CPS, we estimate the probability of the transitions from one's state in 2019 to one's state in 2020, and we use the estimates from the 2018–2019 panel for comparison.

To capture the individuals who were surveyed during the COVID months that started in April, we restricted the sample to those respondents whose scheduled fifth-round survey happened after April 2020, so that all the individuals in the sample were treated.[11] The five states that we considered—1) missing, 2) part-time work, 3) full-time work, 4) school, and 5) disconnected—are mutually exclusive. We defined an individual's state in the first four-month and second four-month panels using the individual's predominant activity—that is, what the person was doing during most of the observed time. For example, if a person was observed three times in the 2019 four-month panel, and the person was in school for two months and worked full time for one month, then the person is defined to be in school. This measure is not perfect, but it allows us to preserve as many observations as possible. In the case of ties among the nonmissing values, we use the following ordering: full-time work > school > part-time work > disconnection. For example, if a person worked part-time and was in school in the same month, we assign the person to school. Similarly, if a person worked part time for two months and worked full time for another two months, then the person is assigned to full-time work.

We estimate a multinomial logit model. The latent utility of individual i in year t and in state $j \in J = \{\text{full-time work, school, part-time work, disconnection, missing}\}$ is given by

$$y_{ijt} = \Sigma_{k \in K} \delta_{kj} I(y_{i(t-1)} = k) + X_i \beta_j + \varepsilon_{ijt}. \tag{2}$$

[11] We conditioned the sample on those who were observed at least once in the first four rounds. Also note that because in March 2020 the survey week is the week of the eighth, and that this was before the states started to close down, the March survey did not capture most of the changes in that month.

Individuals choose the state in year t to maximize utility. To investigate the transition from the previous states, a key explanatory variable is the state in the previous year $t-1$, $I(y_{i(t-1)} = k)$. Because we restricted the sample to those who were interviewed at least once during the first four months, $k \in K = \{$full-time work, school, part-time work, disconnection$\}$. In the analysis, we include dummy variables for male, black, and Hispanic, and they are represented by X_i. The exponential of the δ coefficients provides estimates for the key results of interest: compared to those who were in a predetermined base state in period $t-1$, what is the odds ratio of being in state j relative to the base state in period t, were the person in state k in period $t-1$? Interpreting the odds ratio results is, however, difficult, so we will report the marginal effect instead.

The error term ε_{ijt} is assumed to be $i.i.d.$ and extreme value type-I distributed. The probability of individual i being in state j can be written as:

$$P(y_{it} = j | y_{i(t-1)} = k, X_i) = \frac{e^{\delta_{kj} + X_i \beta_j}}{1 + \Sigma_{l \neq base} e^{\delta_{kl} + X_i \beta_l}}. \tag{3}$$

We estimate the model and report the transition probability in Table 3. The transition probabilities are evaluated at the mean of the covariates.[12] Panel A reports the results for the 2018–2019 panel, which is the prepandemic panel. The rows represent starting states, and the columns represent destination states. The numbers show, among those individuals who were in a given starting state, what percentage are predicted to end up in each of the destination states. The numbers in the same row add up to one by construction.

Table 2 has shown that approximately 40 percent of young people between 18 and 24 were not reinterviewed. The estimation results further reveal that among the four starting states, those who were in school in 2018 had the lowest nonresponse rate in 2019, at 31.1 percent. There is no perfect way to overcome the data attrition problem, so we explicitly estimate the impact of the COVID-19 pandemic on the data attrition. Compared to the 2018–2019

[12] In the estimation, we set school to be the base state. Choosing a different base state does not affect results, but it affects the interpretation if odds ratio results are reported. In this case, however, because we report the marginal effects, the interpretation is unaffected. Table A1 reports the raw transition matrix for the sake of comparison.

panel, the nonresponse rate increased by 0.2–3.7 percentage points across the four starting states (Panel C). This increase was inevitable and expected because interviewing was more challenging during the pandemic compared to the prepandemic period. When interpreting the other results, this situation needs to be taken into account.[13]

With the caveat of data attrition in mind, we continue to discuss the transitions among the other states. Among those who were disconnected in 2018, 33.2 percent remained disconnected in the 2019 survey. This share is larger than the other three nonmissing destination states combined, suggesting that disconnection is persistent.[14] Other than those with disconnection or those not interviewed, 12.0 percent transitioned to full-time work, 8.1 percent to school, and 5.7 percent to part-time work. The pandemic increased the transition to disconnection by 7.4 percent and reduced the transition to the other three nonmissing states. Almost all the reduction in transitions to either type of work maps to the increase in transition to disconnection.

Among those who were in school in 2018, 43.7 percent remained in school in 2019, the largest among the four nonmissing categories. This pattern reflects mostly the feature of the school system: it takes multiple years to acquire a diploma or a degree. The second-largest category is full-time work, 14.4 percent. This shows that among those who leave the school system, a large share ended up working full time, compared to the 5.9 percent that ended up in disconnection and the 4.9 percent that ended up with a part-time position. The pandemic has a small effect on the transition to part-time work, with a drop of 0.1 percentage points, but its impact on the transition to full-time work is larger, at 4.0 percentage points. In other words, among those who left school right before or during the pandemic, a smaller share could find a full-time job compared to previous years. This finding suggests that the

[13]The increase in the nonresponse rate can affect our estimates in the four-by-four matrix that excludes the missing state, but we argue that the impact will not be large. If we distribute the percentage points to the nonmissing states, it will not change the main observations that we discuss in this table.

[14]In this paper, we do not explore the source of the persistence, but two possible reasons can explain that persistence. One reason is that an individual has a preference toward disconnection: those who enter the disconnection state value leisure time or flexibility in working schedules more than others. Another reason is that other forces, in particular negative labor market shocks, drive these people into the state of disconnection and keep them there. These two reasons have different policy implications, but distinguishing between these two reasons is beyond the scope of the paper.

pandemic has a negative impact on the cohort who entered the labor force in 2020.

For those who started out with part-time work in 2018, 29.3 percent transitioned to full-time work, followed by 20.3 percent to part-time work, 7.7 percent to disconnection, and 5.9 percent to school. The pandemic increased the transition to disconnection and to school, while reducing the transition to both types of work. The reduction in the transition to full-time work is larger than the transition to part-time work, 43.3 percent versus 12.8 percent.

Compared to those who started out from part-time work in 2018, those who started out from full-time work were much more likely to remain in full-time work (48.0 percent) in 2019, and much less likely to transition to part-time jobs (3.6 percent). Approximately 5.3 percent of the individuals transitioned from full-time work to school; this number is similar to those who transitioned to school from part-time work. The pandemic increased the transition from full-time work to disconnection, and it reduced the transition from full-time work to full-time work. Part of the reduction in full-time work, however, contributed to an increase in part-time work. The transition from full-time work to part-time work increased by 0.8 percentage points, or 21.0 percent. In contrast, those who transitioned from part-time work experienced declines in both part-time and full-time work because of the pandemic. The difference suggests that although we only see a transitory dip in employment in part-time jobs, the composition of workers who work part time could have changed.

The pandemic reduces the school-school transition by 0.3 percentage points, but at the same time, we observe an increase in the transition from both types of work to school. Schools are usually considered to provide a shield against negative labor market shocks, and students tend to stay in school longer during recessions (Stange, 2012). This time, though, we do not observe an aggregate increase in school enrollment rate; rather, workers seemed to fall back on the school system when job opportunities shrank. Those who were disconnected or those who were already in school did not seem to take advantage of the school option.

In summary, the pandemic drove a proportion of individuals from all four starting states to disconnection. In percentage terms, full-time workers saw the largest increase in the

transition into disconnection: only 3.2 percent of individuals working full-time in 2018 transitioned to disconnection in 2019, but this percentage more than doubled in the following year. The impact of the pandemic on those who were already in disconnection appeared to be small, as the transition to disconnection increased by only 7.4 percent.

Full-time workers also experienced an increase in the transition from full-time work to part-time work, while part-time workers experienced declines in both types of jobs. Both types of workers became more likely to go back school during the pandemic compared to the prepandemic time, so school seemed to provide some level of protection for young workers.[15] Those who started out from disconnection did not seem to benefit from the opportunities the school systems offered.

3 Is this time different?

As with any recession, the pandemic increased the unemployment rate dramatically, but it is also fundamentally different from any of the previous recessions in terms of the speed of its development and the industries that were affected. Individuals' labor supply choices were also affected, because workers were facing greater health risks during the pandemic. In this section, we discuss what this difference means for the youth labor market by comparing this pandemic with the 2007 recession.

In Figure 6, we plot the trends for the share of youth aged 18 to 24 years who are disconnected, in school, or at work.[16] Panel A shows that the trends in disconnection rate almost overlap with the national unemployment rate: the disconnection rate is higher during economic recessions and lower during booms. During the 2007 recession, the disconnection rate increased from 15.4 percent in 2006 to 19.1 percent in 2010—its highest level. The largest annual increase, 2.3 percentage points, happened from 2008 to 2009, which overlapped

[15] A large share of young people who enrolled in school also work part-time. When we break down the part-time work category by part-time workers who are enrolled and those who are not, we find an increase in the transition into school for both categories. This observation suggests that the part-time young workers who are not attached to school also took advantage of the school system when job opportunities shrank.

[16] We average the rates across months within each year. When calculating the shares for disconnection, work, and school, we dropped the observations in June, July, and August.

with the largest increase in the unemployment rate. The disconnection rate then declined gradually after 2010 as the economy recovered from the recession.

As in this pandemic, the increase in the disconnection rate during the 2007 recession was mostly driven by the reduction in work. From 2006 to 2010, the share of young people at work dropped from 61.5 percent to 52.7 percent, and the level of working young adults never recovered to the prerecession level. The share of young people in school increased over the past three decades, with a slightly steeper increase during the recession.

Unlike the 2020 pandemic, the 2007 recession affected young men and young women differently. Figure 7 plots the trends in disconnection by gender. The trends for males overlap with the trends for the national unemployment rate. The trends are different for females. The disconnection rate among females is on average higher than the disconnection rate for males, although it dropped from approximately 24 percent in early 1990 to 18 percent in early 2000. Surprisingly, the 2007 recession had only a small impact on the disconnection rate among females, though the share of females who worked dropped.[17]

In Figure A4, we plot the trends for the share of individuals in school and at work by gender. The percentage of young men and young women at work dropped during the 2007 recession, but the decline from 2006 to 2010 is slightly larger for males than for females, 11.5 percentage points versus 5.9 percentage points. The percentage of young men in school had been increasing since the early 1990s, but the increase was faster during the 2007 recession. By comparison, this pattern of a faster increase in school rate is not observed among females. This suggests that young men are more likely to take advantage of the school system during a recession. In this pandemic, however, we did not observe an increase in the school rate among young men.

In Figure A5, we plot the percentage change in employment by industry. We use data from 2006 and 2010 when calculating these changes. This figure can partially explain the gender differences in the disconnection rate we see in the 2007 recession. Comparing the

[17]Figure A3 further breaks down the data by race. The pattern in which the disconnection rate among young males increased while the disconnection rate among young females barely increased during the 2007 recession holds across race groups.

impact of the pandemic and the recession across industries, the industries that saw the largest reduction in employment during the pandemic—entertainment and recreation services and eating, drinking, and lodging places—experienced employment growth during the 2007 recession. In the 2007 recession, the decline is largest in construction and manufacturing of durable goods, and a majority of workers in these industries are male. These two observations are consistent with the fact that males were more responsive during the 2007 recession.

Finally, Panel B of Table 3 reports the transition probabilities before the 2007 recession, and Panel D shows the impact of the 2007 recession.[18] We highlight two observations regarding full-time work and schooling, which are two states that we consider to be better than the others in terms of human capital accumulation.

First, in both cases, we see an increase in the transition from all states to disconnection and a decrease in the transition from all states to full-time work. The impact on full-time work is larger this time than the 2007 recession: the full-time to full-time transition decreased more, and the full-time work to disconnection transition increased more during this pandemic. Toward the end of 2020, full-time employment had greatly recovered. How this large decline in full-time work affected young people in the longer run is worth exploring, but we do not have sufficient data to answer the question now.

Second, during the 2007 recession, we saw an increase in the transition from all states to school, but this is not what we observed during this pandemic. In particular, during the 2007 recession, we noticed an increase in school-to-school transition—that is, young people stayed in school longer, or they chose to pursue a higher degree. This increase in school-to-school transition is not observed during the pandemic. One explanation for the lack of school-to-school transition is that the online courses, compared to in-person instruction, are

[18] We use the data between 2008 and 2010 for Panel D to capture the developing period of the 2007 recession, not the recovery period. The pandemic developed very quickly. Though the recovery, as indicated by measures such as unemployment rate and disconnection rate, also happened fast, we still consider our analysis as having captured the short-run effect of the pandemic. For young people, the impact can linger for longer periods. For example, those who were supposed to be transitioning from school to the labor market in 2020 may have experienced delays in finding a job. This type of adjustment takes time to resolve. We think, therefore, that the current transition results are more likely to capture the short-run impact of the pandemic and are more comparable to the developing period of the recession.

less attractive to those who are already enrolled. It is also likely that the development of the pandemic happened so quickly that young people were not able to adjust, or that they expected it to be a short-term event, so that adjusting their plans for it was not necessary. Further research is needed to evaluate these explanations.

4 Discussion and limitations

The COVID-19 pandemic has negatively affected young people. More young people stayed disconnected from the labor market or school. Compared to prime-aged individuals, young people are more vulnerable to economic downturns, and importantly, the impact of such downturns could be long-lasting for young adults and might negatively affect their lifetime earnings.

This paper does not provide a conclusive answer to the impact of the pandemic on young people, as we are still in the middle of the pandemic. Beyond the outcomes measured by this paper, young people who are in school could also be negatively affected from online-only instruction. Online instruction may not be a perfect substitute for in-person instruction, and occasional switches between online and in-person learning can make students' lives even more challenging. Young entrepreneurs may also find it very challenging to help their businesses survive the pandemic. These young people who experienced this unexpected downturn will need additional support to resume their original plans.

Finally, we discuss two limitations of the paper. First, the CPS data do not allow us to follow an individual for more than 16 months, so evaluating the long-run impact of the pandemic on youths' labor market outcomes requires other data sets.

Second, the CPS only allows us to observe reported work—and, oftentimes, formal work. Disconnected youth, however, can be involved in occasional paid alternative work arrangements that they do not report unless they are specifically asked to do so. For example, according to the data from the 2019 Survey of Household Economics and Decision Making, among those who were disconnected based on a similar definition as in the CPS, 25.1 percent

reported that they were paid for performing some tasks.[19] Because of the data limitations in the CPS, we are not able to capture these alternative work arrangements in the analysis.

[19]For example, 13.9 percent reported that they earned some income from work related to house cleaning, yard work, or other property maintenance work; 8.4 percent completed some paid tasks online, such as freelance work through Fiverr or Upwork; 7.3 percent helped with dog walking, feeding pets, or house sitting; 1.8 percent provided child or elder care services; and 1.8 percent provided driving or ride-sharing services such as Uber or Lyft. The statistics are based on 584 individuals between 18 and 24 years old. The estimated disconnection rate is 13.6 percent, similar to the estimate in the CPS.

Table 1: Definition of Youth Disconnection

	In school	Has job and working	Has job and not working (conditional on not in school)										Unemployed (conditional on not in school)	NILF (conditional on not in school)
			Vacation	Own illness, injury, or medical problems	Childcare problems	Other family or personal obligations	Labor dispute	Bad weather	Maternity or paternity leave	School or training	Civic or military duty	Other reasons		
Disconnected?	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	Y

NOTE: This table clarifies the definition of disconnection used in the paper. The categories correspond to the categories given in the CPS.

Table 2: Probability of Being Reinterviewed

			Panel A: Full Sample			Panel B: Aged 18–24		
Age group	Gender	Race	2018–2019	2019–2020	Difference (p.p)	2018–2019	2019–2020	Difference (p.p)
Age 18–24			64.9%	62.8%	-2.1%			
Age 25–54			78.0%	77.2%	-0.8%			
	Male		79.1%	78.5%	-0.6%	66.6%	64.3%	-2.3%
	Female		79.6%	79.2%	-0.4%	63.1%	61.2%	-1.9%
		White	81.2%	80.5%	-0.7%	63.9%	61.4%	-2.5%
		Black	74.5%	74.4%	-0.1%	66.4%	63.8%	-2.6%
		Hispanic	75.6%	75.6%	0.0%	66.3%	65.0%	-1.2%
		Asian	80.0%	78.8%	-1.2%	68.5%	66.2%	-2.2%
		Other	74.9%	74.6%	-0.3%	63.3%	64.8%	1.5%

NOTE: This table reports the probabilities of being reinterviewed in the 2019–2020 panel, and the probabilities are then compared with the 2018–2019 panel. Panel A is based on the full sample, and then the data is broken down by age group, gender, and race. Panel B is restricted to individuals who are between 18 and 24 when entering the sample. See text for details regarding the sample used in this table.

Table 3: Transition Matrix from the Multinomial Logit Regressions Comparing the Pandemic and the 2007 Recession

Panel A: 2018–2019

	Disconn.	PT Work	School	FT Work	Missing
Disconn.	0.332	0.057	0.081	0.120	0.410
	(0.013)	(0.006)	(0.007)	(0.009)	(0.014)
School	0.059	0.049	0.437	0.144	0.311
	(0.004)	(0.004)	(0.009)	(0.006)	(0.008)
PT Work	0.077	0.203	0.059	0.293	0.368
	(0.010)	(0.014)	(0.008)	(0.016)	(0.017)
FT Work	0.032	0.036	0.053	0.480	0.399
	(0.003)	(0.003)	(0.004)	(0.008)	(0.008)

Panel B: 2003–2006

	Disconn.	PT Work	School	FT Work	Missing
Disconn.	0.216	0.057	0.063	0.137	0.527
	(0.004)	(0.002)	(0.002)	(0.003)	(0.005)
School	0.043	0.045	0.410	0.138	0.364
	(0.001)	(0.001)	(0.003)	(0.002)	(0.003)
PT Work	0.064	0.161	0.068	0.244	0.463
	(0.003)	(0.005)	(0.003)	(0.006)	(0.007)
FT Work	0.028	0.038	0.045	0.435	0.454
	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)

Panel C: 2019–2020 (Difference; p.p./percent)

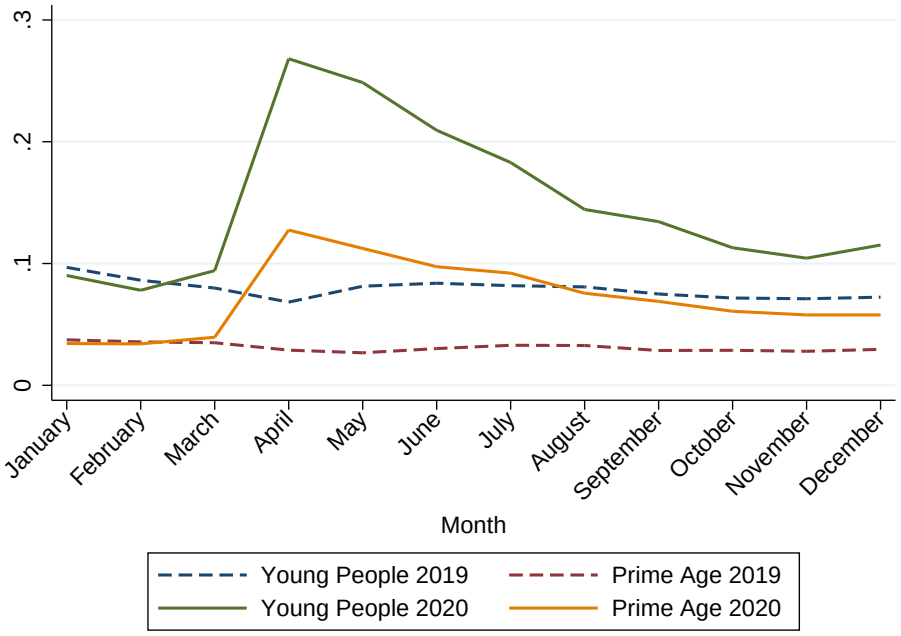
	Disconn.	PT Work	School	FT Work	Missing
Disconn.	0.024	-0.010	-0.005	-0.011	0.002
	7.4%	-17.6%	-6.2%	-9.4%	0.5%
School	0.019	-0.001	-0.003	-0.040	0.026
	32.6%	-2.5%	-0.7%	-27.8%	8.4%
PT Work	0.055	-0.026	0.061	-0.127	0.037
	72.0%	-12.8%	102.4%	-43.3%	9.9%
FT Work	0.039	0.008	0.008	-0.068	0.013
	124.3%	21.0%	14.2%	-14.1%	3.3%

Panel D: 2008–2010 (Difference; p.p./percent)

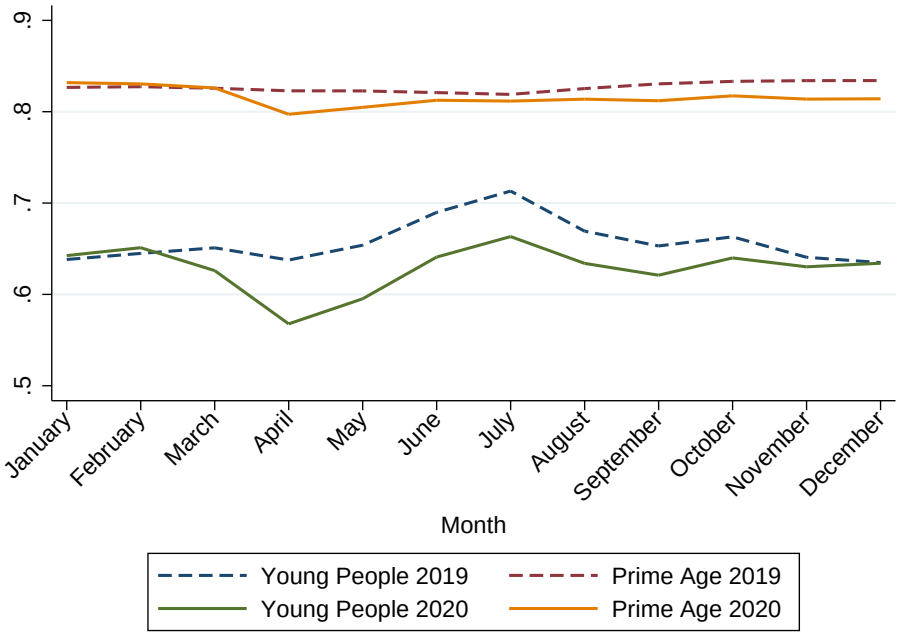
	Disconn.	PT Work	School	FT Work	Missing
Disconn.	0.04	0.014	0.011	-0.027	-0.037
	18.5%	24.6%	17.5%	-19.7%	-7.0%
School	0.017	0.007	0.041	-0.027	-0.039
	39.5%	15.6%	10.0%	-19.6%	-10.7%
PT Work	0.021	0.044	0.018	-0.035	-0.047
	32.8%	27.3%	26.5%	-14.3%	-10.2%
FT Work	0.011	0.014	0.008	-0.005	-0.027
	39.3%	36.8%	17.8%	-1.1%	-5.9%

NOTE: This table reports the estimated transition probabilities. The rows represent the starting states, and the columns represent the destination states. For Panel A and Panel B, the numbers in each row add up to one. The missing category includes those respondents who were not reinterviewed and those respondents whose status was undetermined. Panel C and Panel D report the change in the transition probabilities. Percentage point changes are reported in black, and percentage changes are in blue. Delta-method-calculated standard errors are in parentheses.

Figure 1: Unemployment Rate and Labor Force Participation Rate (LFPR) by Age Groups



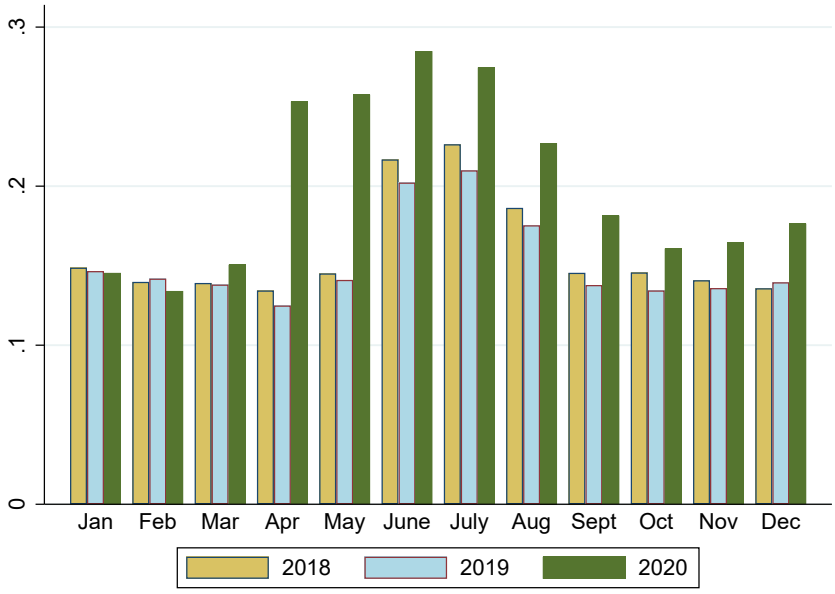
(a) Unemployment rate



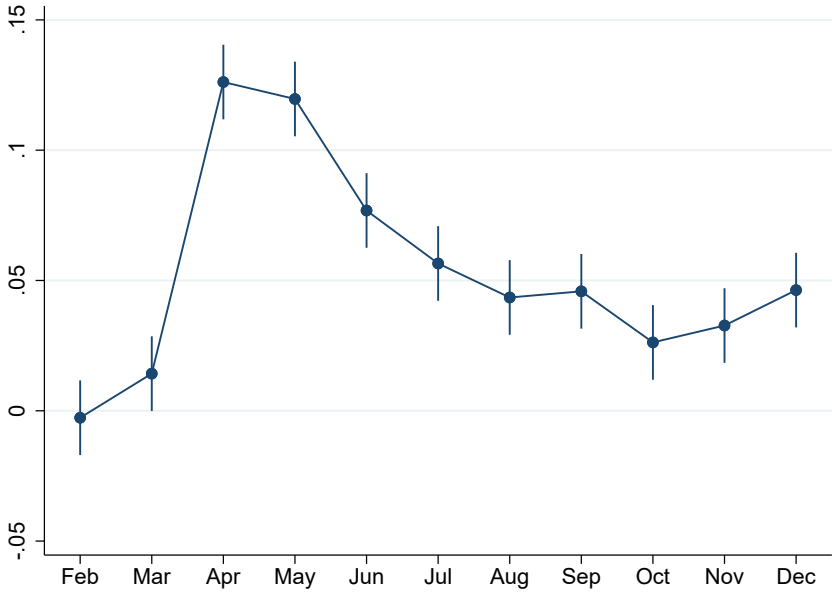
(b) LFPR

NOTE: This figure plots the unemployment rate and the labor force participation rate among young and prime-aged people. "Young people" refers to those individuals who are between 18 and 24 years of age, and "prime-aged individuals" are those between 25 and 54 years of age. Data source: Current Population Survey.

Figure 2: The Impact of the Pandemic on Disconnection Rate



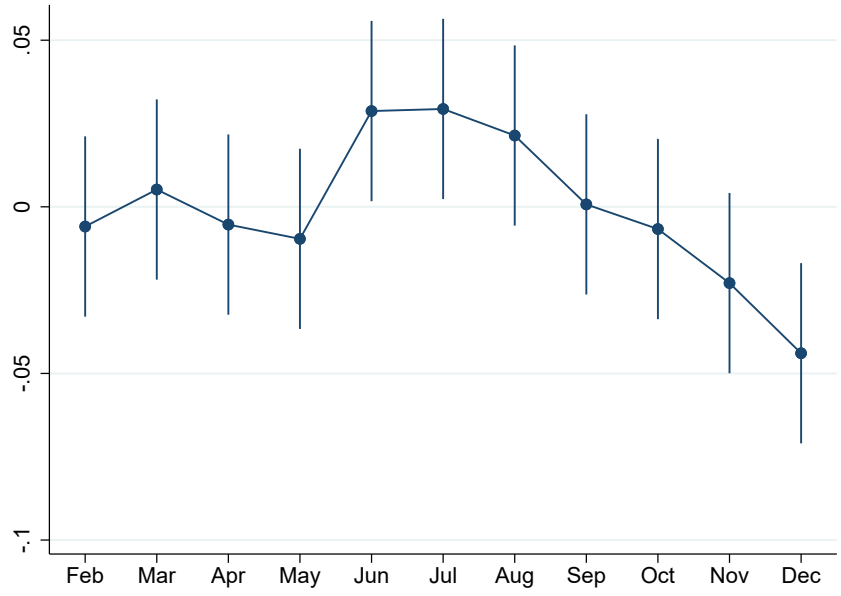
(a) Disconnection rate



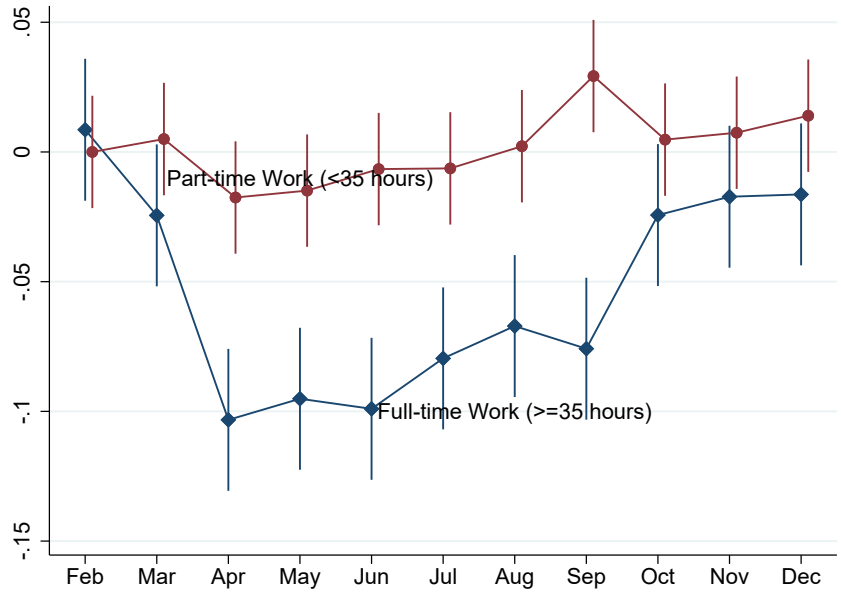
(b) Estimates for the impact conditional on year and month fixed effects

NOTE: Panel A of this figure plots the disconnection rate among young people aged 18 to 24 from 2018 to 2020 by month. Panel B shows the estimated impact of the pandemic on disconnection rate by month and the associated 95 percent confidence interval. The estimation equation is given by Equation 1. We use the data between 2015 and 2020 for the estimation.

Figure 3: Impact of the Pandemic on Share of Young People in School or at Work



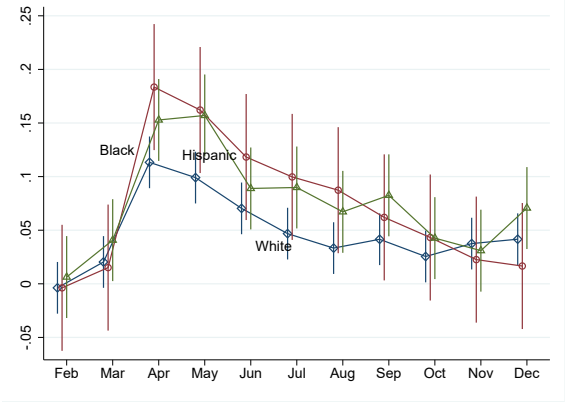
(a) School



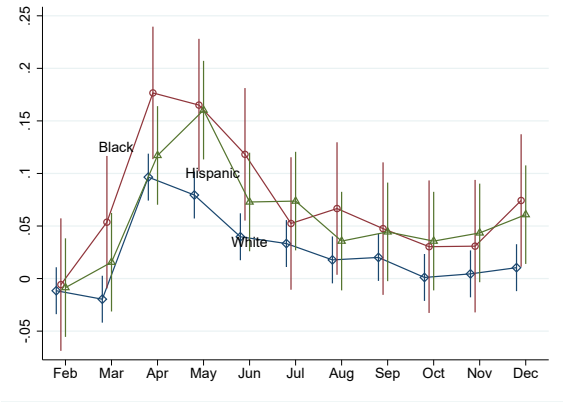
(b) Work

NOTE: This figure plots the impact of the pandemic on the share of young people in school (Panel A) or at work (Panel B) by month. For these two subfigures, we construct four mutually exclusive states: full-time work, school, part-time work, and disconnection. In the case of ties, we use the following ordering: full-time work > school > part-time work > disconnection.

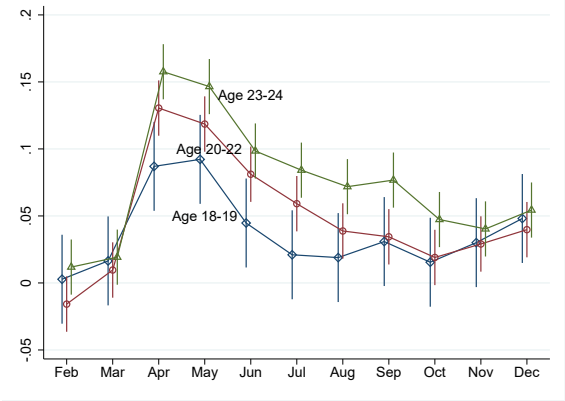
Figure 4: Impact of the 2020 COVID-19 Pandemic on Disconnection Rate by Demographic Groups



(a) Males



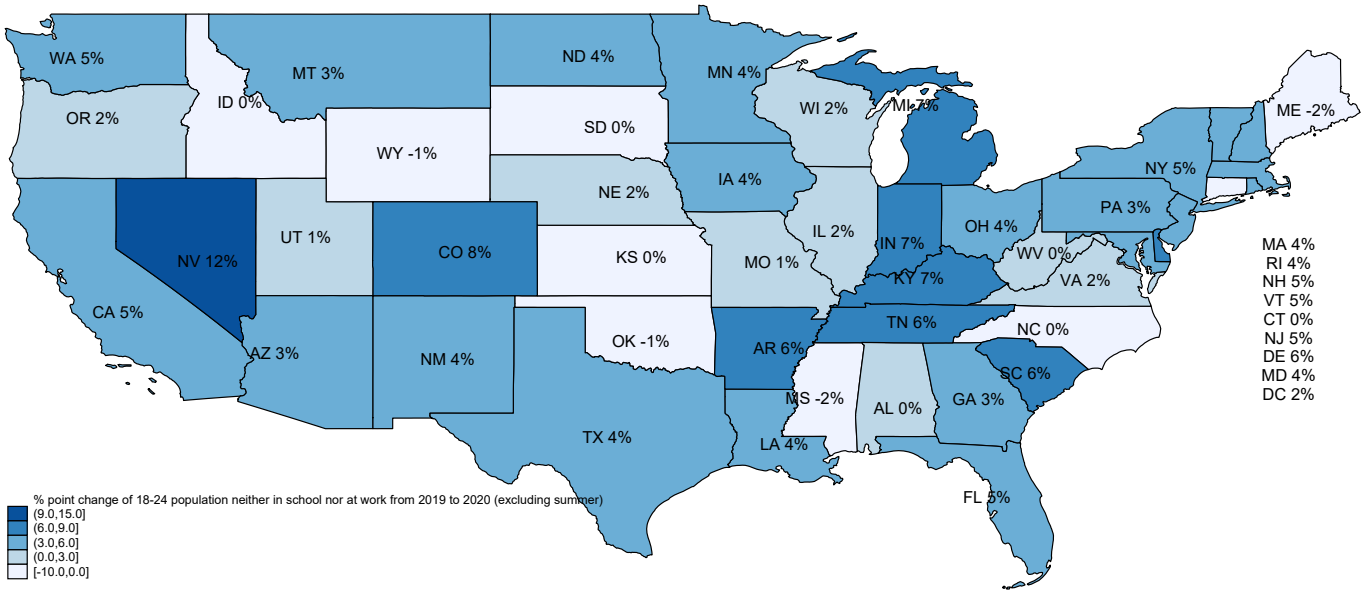
(b) Females



(c) By age group

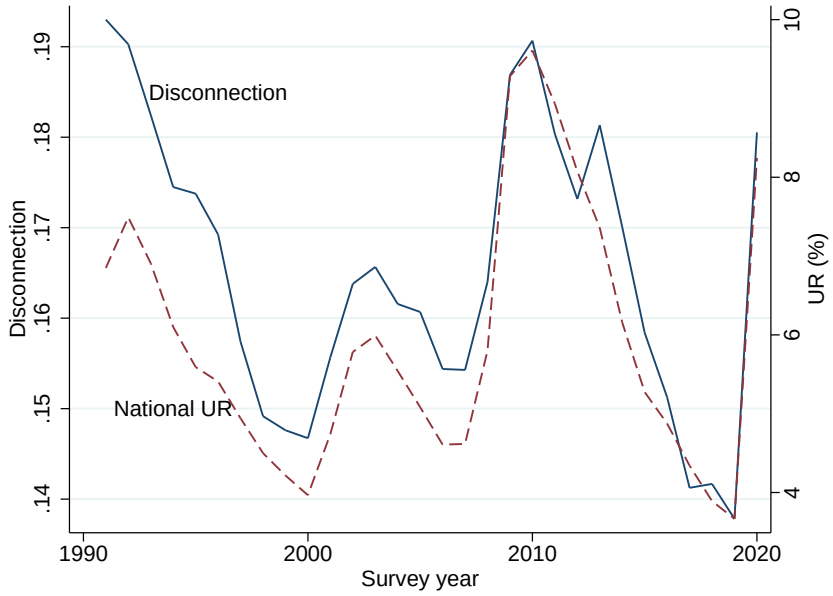
NOTE: This figure shows the impact of the pandemic on disconnection rate by race, gender, and age groups. The estimation equation is given by Equation 1. We use the data between 2015 and 2020 for the estimation.

Figure 5: 2019–2020 Changes in Disconnection Rate by State (leaving out summer months)

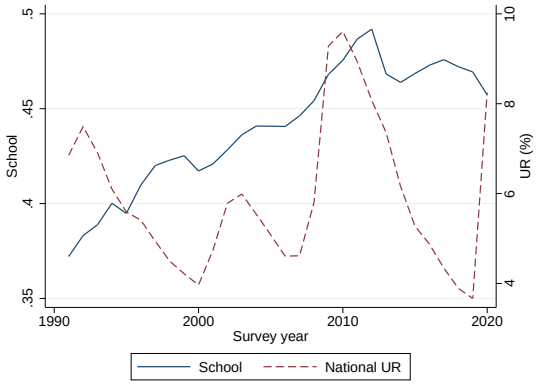


NOTE: This figure plots the percentage-point change in the disconnection rate from 2019 to 2020 by state. The change in the disconnection rate is calculated using data between January and December, leaving out summer months.

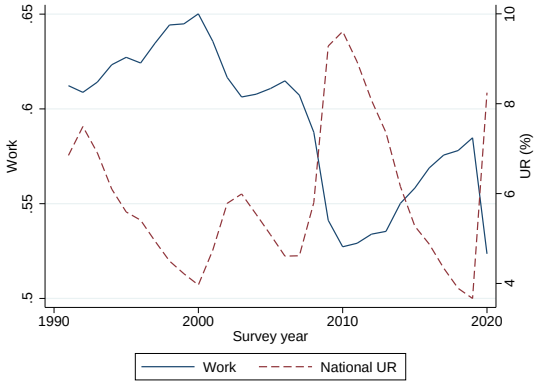
Figure 6: Disconnection, school, and work rates and the national unemployment rate for the 2020 COVID-19 pandemic and the 2007 recession



(a) Disconnection



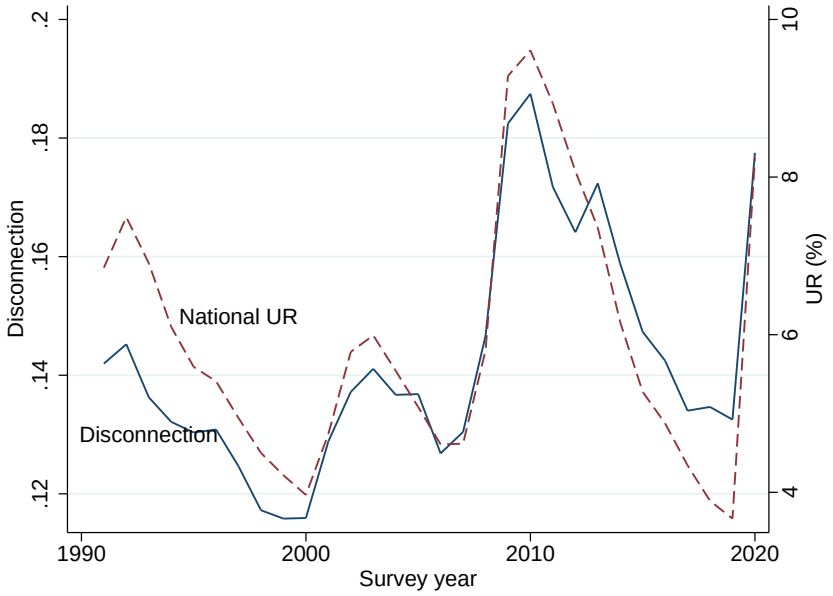
(b) School



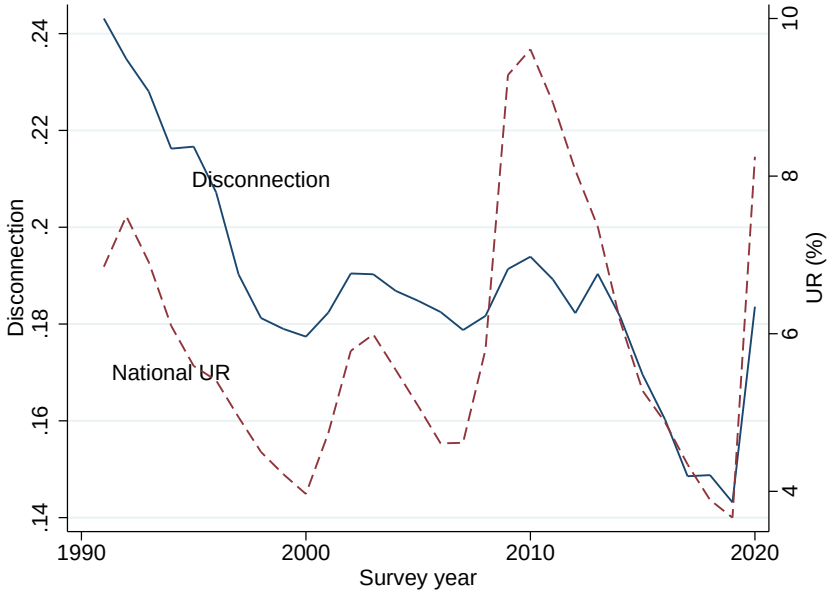
(c) Work

Note: These figures plot the share of young people disconnected (panel A), in school (panel B), and at work (panel C). Summer months are excluded when calculating these rates. In each figure, trends for the civilian unemployment rate are added as dashed lines. The unemployment rate is calculated by the BLS, and it includes civilians above 16. Unemployment rate data are from the BLS data finder.

Figure 7: Disconnection Rate and National Unemployment Rate by Gender for the 2007 COVID-10 Pandemic and the 2007 Recession



(a) Males



(b) Females

NOTE: This figure shows disconnection rate by gender. Summer months are excluded when calculating these rates. National unemployment rate from the BLS is plotted in dashed lines.

References

Belfield, C. R., H. M. Levin, and R. Rosen (2012). The Economic Value of Opportunity Youth. *Corporation for National and Community Service*.

Chen, Y., X. Xia, and J. Yan (2020). Trapped in Idleness: The Experience of Young Men Without Work in the United States. *Unpublished draft*.

Cheng, W., P. Carlin, J. Carroll, S. Gupta, F. L. Rojas, L. Montenovo, T. D. Nguyen, I. M. Schmutte, O. Scrivner, K. I. Simon, C. Wing, and B. Weinberg (2020). Back to Business and (Re)employing Workers? Labor Market Activity During State COVID-19 Reopenings. Technical report, NBER Working Paper 27419.

Chetty, R., J. Friedman, N. Hendren, and M. Stepner (2020). The Economic Impacts of COVID-19: Evidence from a New Public Database Built from Private Sector Data. Technical report, NBER Working Paper 27431.

Cortes, G. M. and E. Forsythe (2020). The Heterogeneous Labor Market Impacts of the COVID-19 Pandemic. Technical report, Upjohn Institute Working Paper 20-327.

Hoynes, H., D. L. Miller, and J. Schaller (2012). Who Suffers During Recessions? *Journal of Economic Perspectives 26*(3), 27–48.

ILO (2020). *Global Employment Trends for Youth 2020: Technology and the Future of Jobs*. Geneva: International Labour Office.

Kahn, L. B. (2010). The Long-Term Labor Market Consequences of Graduating from College in a Bad Economy. *Labour Economics 17*(2), 303–316.

Mascherini, M., L. Salvatore, A. Meierkord, and J.-M. Jungblut (2012). *NEETs: Young Ppeople Not in Employment, Education or Training: Characteristics, Costs and Policy Responses in Europe*. Luxembourg: Publications Office of the European Union.

Oreopoulos, P., T. Von Wachter, and A. Heisz (2012). The Short- and Long-Term Career Effects of Graduating in a Recession. *American Economic Journal: Applied Economics 4*(1), 1–29.

Stange, K. M. (2012). An Empirical Investigation of the Option Value of College Enrollment. *American Economic Journal: Applied Economics 4*(1), 49–84.

von Wachter, T. (2020, November). The Persistent Effects of Initial Labor Market Conditions for Young Adults and Their Sources. *Journal of Economic Perspectives 34*(4), 168–94.

Appendices

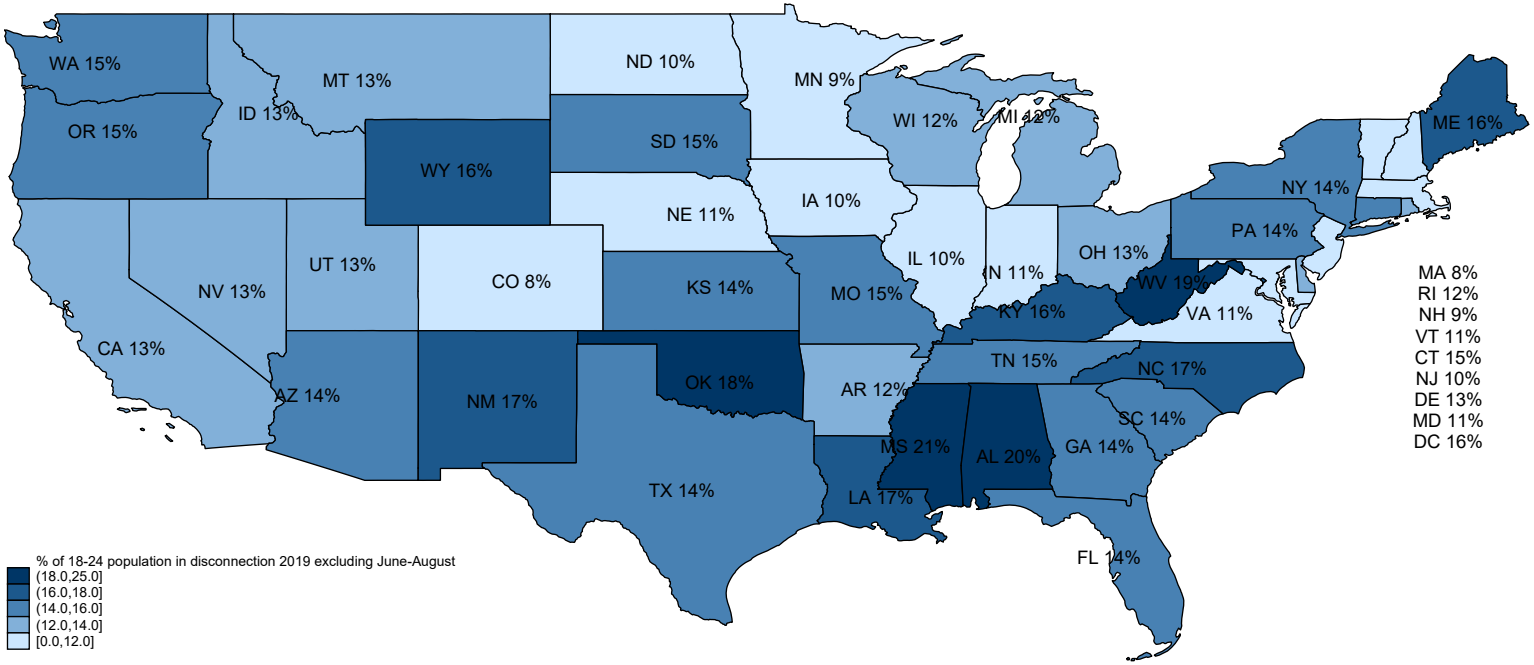
A Tables and Figures

Table A1: Transition Matrix from Original Data

	Panel A: 2018–2019				
	Disconn.	**PT Work**	**School**	**FT Work**	**Missing**
Disconn.	0.336	0.057	0.081	0.118	0.408
School	0.059	0.048	0.440	0.143	0.311
PT Work	0.077	0.206	0.059	0.289	0.370
FT Work	0.031	0.036	0.053	0.485	0.395
	Panel B: 2019–2020 Difference (p.p./percent)				
	Disconn.	**PT Work**	**School**	**FT Work**	**Missing**
Disconn.	0.025	-0.011	-0.006	-0.010	0.002
	7.4%	-18.3%	-7.5%	-8.7%	0.4%
School	0.018	-0.001	-0.003	-0.040	0.026
	31.4%	-2.1%	-0.6%	-28.3%	8.2%
PT Work	0.056	-0.028	0.060	-0.125	0.037
	73.2%	-13.7%	102.6%	-43.2%	9.9%
FT Work	0.039	0.007	0.008	-0.069	0.014
	125.6%	19.8%	15.0%	-14.2%	3.6%

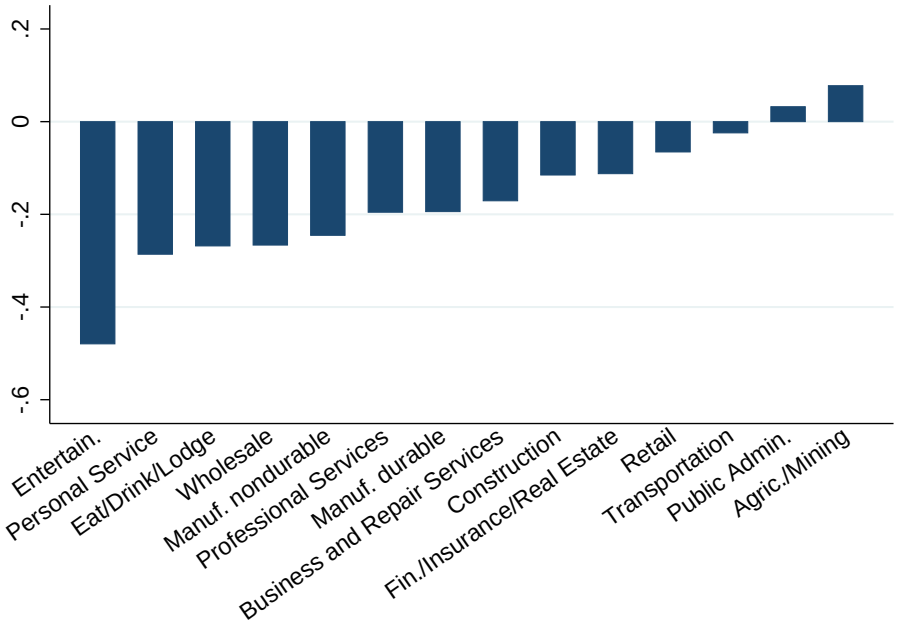
NOTE: This table reports the raw transition probabilities. The rows represent the starting states, and the columns represent the destination states. For Panel A, the numbers in each row add up to one. The missing category includes those respondents who were not reinterviewed and those respondents whose status was undetermined. Panel B reports the change in the transition probabilities. Percentage-point changes are reported in black, and percentage changes are in blue.

Figure A1: Disconnection Rate by State (2019)



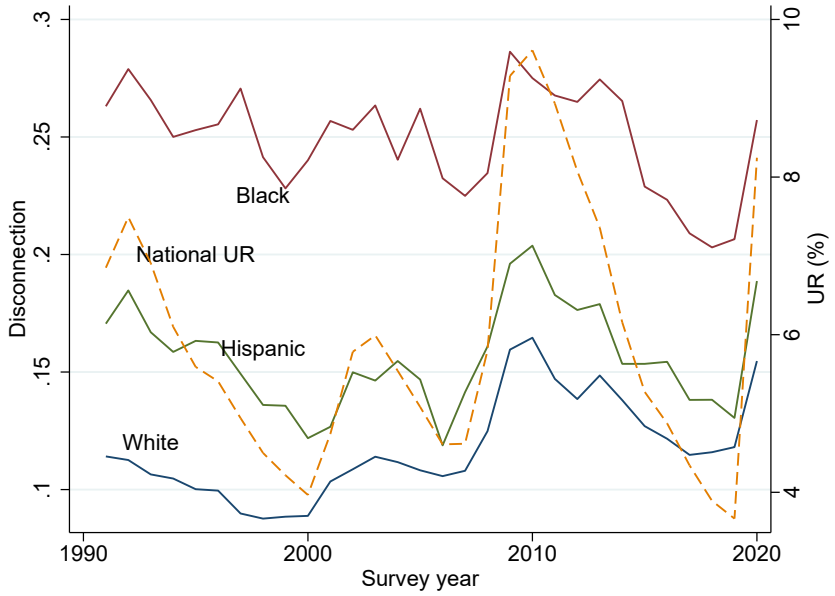
NOTE: This map plots the disconnect rate in 2019 by state. The disconnection rate is calculated using data between January and December, but excluding summer months.

Figure A2: Percentage Change in Employment from 2019 to 2020

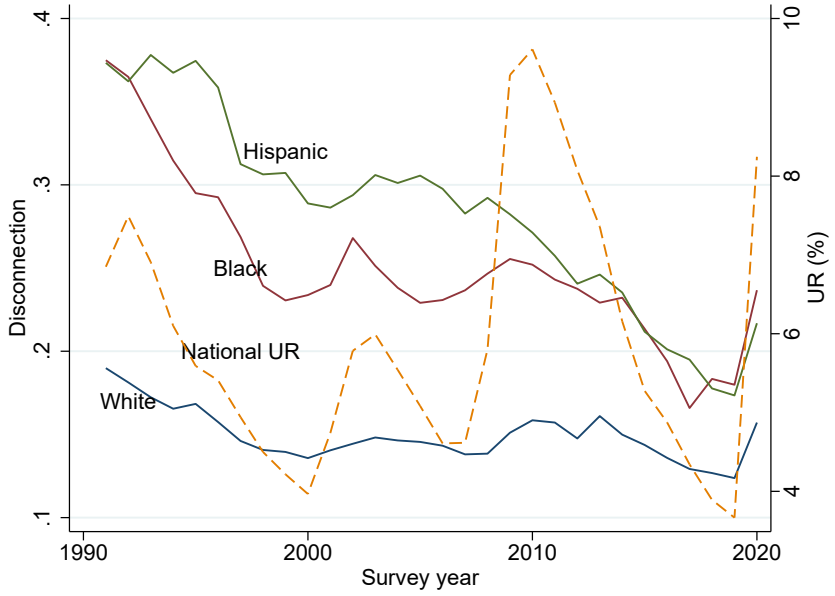


NOTE: This figure shows the percentage changes in employment among young people by major industry categories. The numbers are calculated using data from April to December in 2019 and 2020.

Figure A3: Disconnection Rates by Gender and Race for the 2020 COVID-19 Pandemic and the 2007 Recession



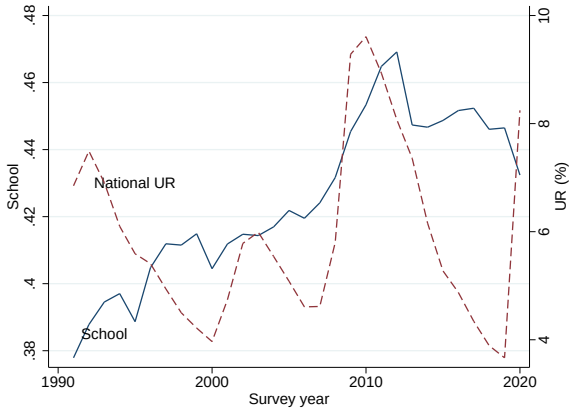
(a) Males



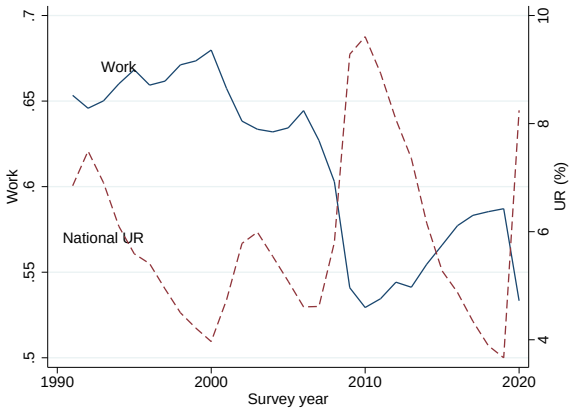
(b) Females

NOTE: This figure shows disconnection rates by gender and race for the 2020 COVID-19 pandemic and the 2007 recession. The national unemployment rate from the BLS is plotted in dashed lines.

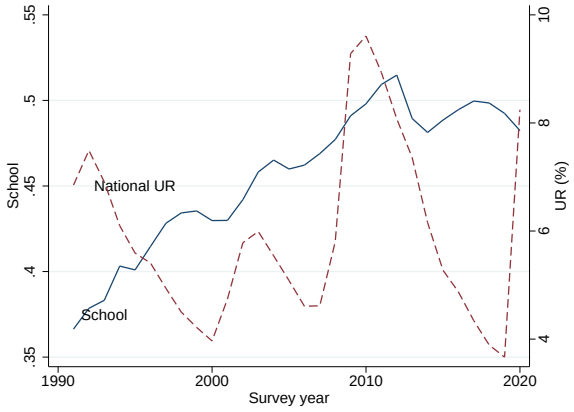
Figure A4: Share of Youth in School or at Work by Gender, 1990–2020



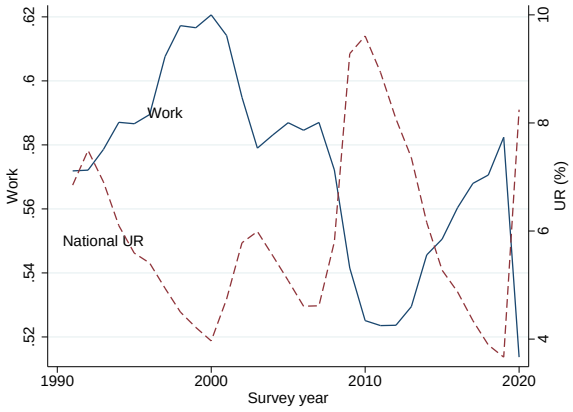
(a) School (males)



(b) Work (males)



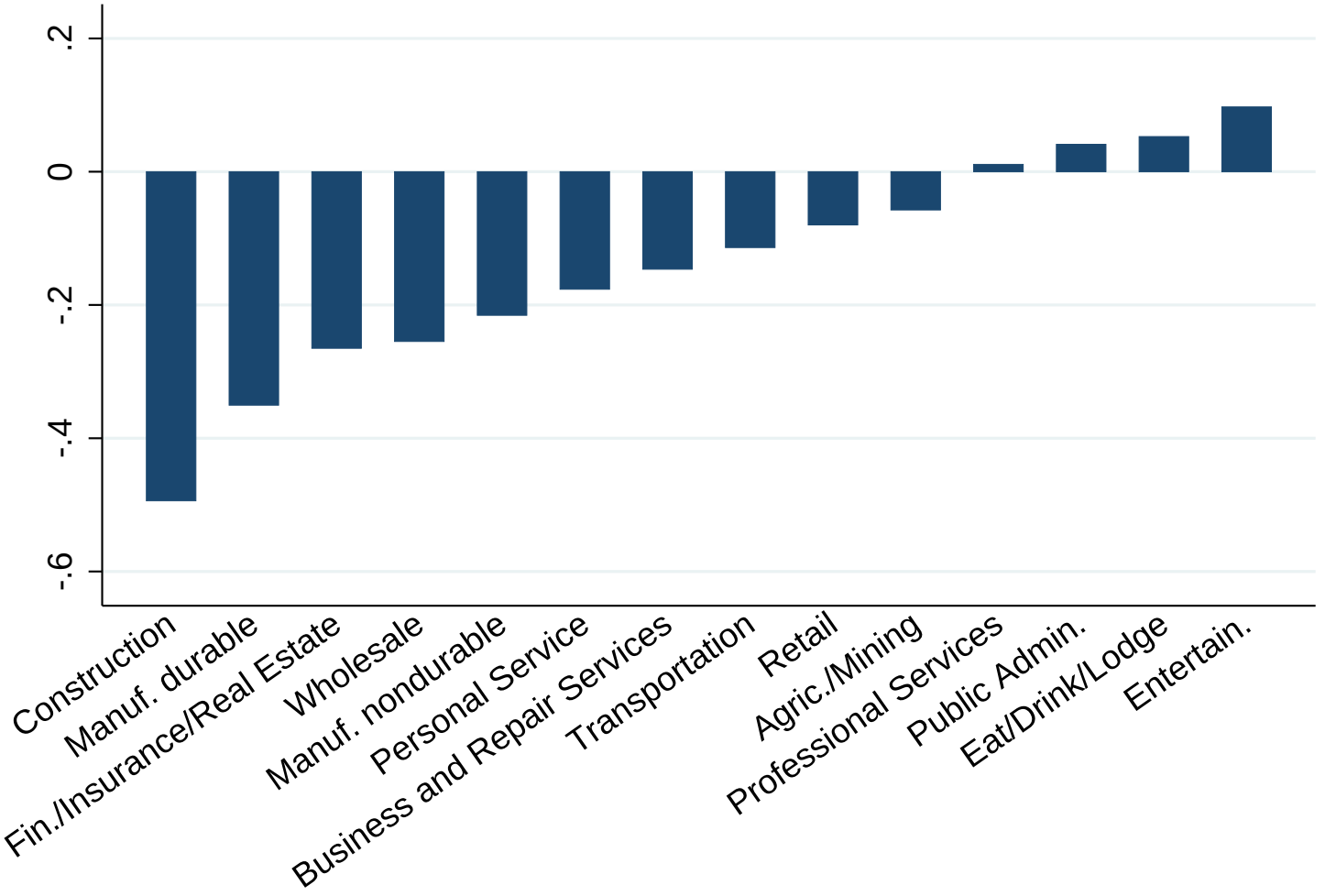
(c) School (females)



(d) Work (females)

NOTE: In this figure, we plot the trends in the share of young people in school or at work by gender.

Figure A5: Percent Change in Youth Employment by Industry from 2006 to 2010



NOTE: This figure shows the percentage change in employment from 2006 to 2010 among young people by major industry categories. The changes are calculated using data from all the months in both years.